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Observations of Cetaceans off California, Oregon, and Washington

by Clifford H. Fiscus and Karl Niggol

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Observations of Cetaceans off California, Oregon, and Washington

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CLIFFORD H. FISCUS and KARL NIGGOL

United States Fish and Wildlife Service
Special Scientific Report--Fisheries No. 498

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Frontispiece.--The high triangular dorsal fin of the killer whales makes it easy to recognize. They are more commonly seen in coastal waters than far offshore.

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ABSTRACT

Records are given of 16 species of cetaceans observed off the west coast of the United States between Cortes Bank, Calif., and Cape Flattery, Wash., from February through April 1958, January through April 1959, and November 1960 through April 1961. Most of the observations were made off California. The survey vessels operated in the area from the 100-fathom curve out to about 100 miles offshore. Specimens of Delphinus, Lagenorhynchus, Orcinus, and Phocoenoides were collected. Weights, measurements, and stomach analyses are included in the paper.

INTRODUCTION

Published records of cetaceans observed or captured along the Pacific coast of North America do not indicate accurately their distribution or numbers. These records give the impression of greater scarcity and a more restricted distribution than is true. Few people who go to sea are able to identify porpoises and whales. The whaling industry is a good source of information, but for many years whaling by the United States and Canada has been limited to part of the coast of California and British Columbia, or has been nonexistent. The operations of fishermen by area and season leave vast expanses unvisited. Usually, fishermen ignore cetaceans unless they interfere with fishing, as schools of porpoises (Stenella) do when they are caught along with tuna during purse seining (McNeely, 1961; Hester, Hunter, and Whitney, 1963).

Reported sightings of cetaceans obviously tend to be most frequent where research vessels operate most continuously. We believe that cetaceans are a much more important part of the ocean fauna than is generally realized. Except for the killer whale, their feeding is not spectacular or takes place at such a depth that it is not observed. Thus, they do not attract attention, as seals and sea lions do, by their predation. The ecological influence of their feeding may be much greater than suspected.

Currently, small cetaceans are very popular as performing captives in marine aquaria and as objects of research on hydrodynamics and underwater echolocation.

During pelagic fur seal investigations by the Bureau of Commercial Fisheries in the coastal waters off California, Oregon, and Washington in 1958-61, records were made of cetaceans observed. We were on separate vessels, and each of us usually had three assistants aboard. Watches were maintained at sea from 0600 to 1800 daily. We spent from 15 to 20 full days per month at sea during a total of about 10 months.

The primary function of the vessel and crew was to obtain data and specimens of fur seals, and the observation of cetaceans was incidental. The vessel was directed to get a close look at cetaceans only when seals had not been sighted. No effort was made to go to an area because porpoises or whales could be expected there. In fact, however, an abundance of food, such as schools of anchovies (Engraulis mordax), attracted both seals and cetaceans.

Men on watch at the time of observation made the identifications. Only positively identified cetaceans were recorded; about 50 percent of the large whales and 90 percent of the smaller cetaceans seen could be identified.

The area cruised by the vessels extends from Cortes Bank off California (lat. 32° 30' N.) north to the Strait of Juan de Fuca between Washington and British Columbia (lat. 48° 30' N.). Generally, we concentrated our attention on waters from the 100-fathom (fm.) curve out to about 100 miles offshore.

Some measure of the frequency of observations, distance covered in making them, and location of areas cruised where no cetaceans were seen is desirable. This is done crudely

Note.--Clifford H. Fiscus, Wildlife Biologist (Research), Bureau of Commercial Fisheries Marine Mammal Biological Laboratory, Seattle, Wash.; and Karl Niggol, Wildlife Biologist (Research), now employed by the Bureau of Commercial Fisheries Fish Passage Research Program, Portland, Oreg.

by combining the information in figures 1 and 2 and that on vessel time given in the following three paragraphs.

In 1958 one vessel cruised off northern California and southern Oregon from mid-February to mid-March and then went south as far as San Miguel Island in late March. A second vessel cruised off central California between Point Reyes and Point Sur from 1 February through 10 April. Both vessels moved north from Point Reyes in April, completing the season by 29 April off Washington (fig. 1).

The boat hunting days (one boat hunting day = 8 to 12 hours of effort) in each State were: California -64; Oregon -11; Washington - 17.

In 1959 one to three vessels operated between Point Reyes and Point Sur, Calif., from 20 January through 8 April. One or two vessels collected between Point Sur and the vicinity of San Miguel Island from 20 January through 2 March. One vessel cruised off northern California from 15 March to 8 April and one cruised off Oregon in early April. From 8 through 29 April one or two vessels operated

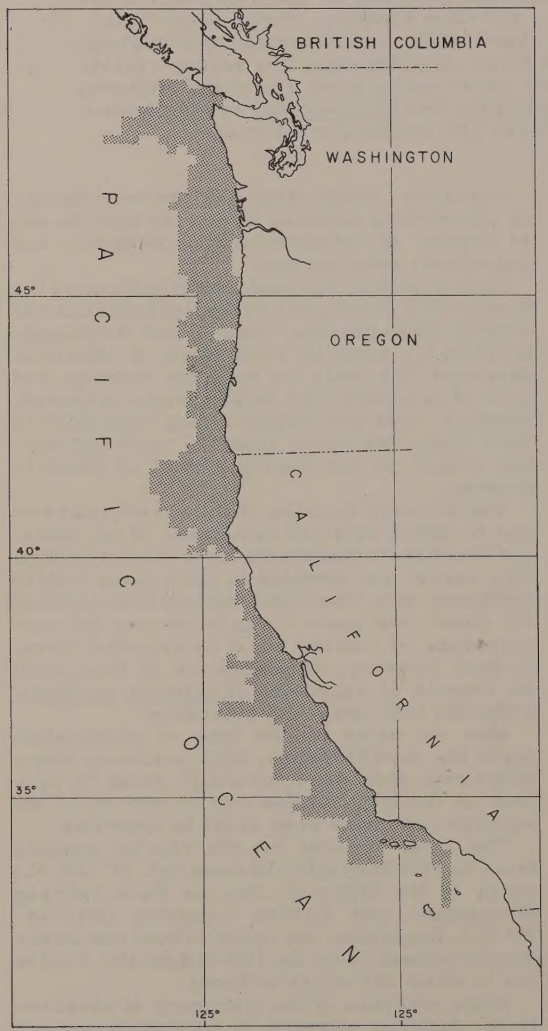

Figure 1.--Area where observations were made in 1958-59.

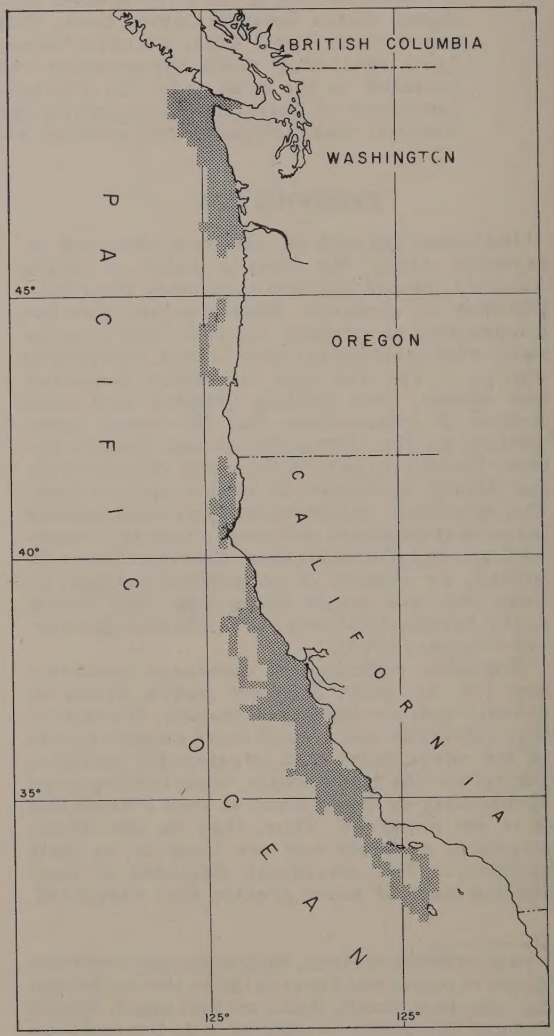

Figure 2.--Area where observations were made in 1960-61.

off Washington (fig. 1). Boat hunting days in 1959 were: California - 120; Oregon - 16; Washington - 34.

One vessel arrived in central California in late November 1960. It cruised between Point Arena and Pigeon Point until 14 December. It resumed collecting on 5 January 1961 and continued to operate between Point Reyes and Point Sur until 1 April, except from 15 January to 25 February when it was cruising between Point Sur and Cortes Bank. In April the vessel moved through northern California and Oregon waters to Washington. One or two vessels cruised off Washington from 23 March through 25 April (fig. 2). Boat hunting days in late 1960 and 1961 were: California - 70; Oregon - 4; Washington - 36.

Symbols used to identify specimens (example: Tac-50-1B) indicate the vessel, year, specimen number, and species; TACOMA = Tac, MORNING STAR = MS.

The order followed in listing the cetaceans observed is generally that of Miller and Kellogg (1955).

In the figures the species are indicated by various symbols. Inside each species symbol is a sign indicating the month in which the observation occurred. Observations for 1958 and 1959 are grouped together in figures 3-8 and those for 1960 and 1961 in figures 9-12.

SPECIES RECORDS

Physeter catodon, sperm whale (figs. 3 and 9)

No attempt was made to record the sex of sperm whales. Both sexes are taken off San Francisco and brought to the whaling stations at Richmond, Calif., in San Francisco Bay. Although pregnant females are found at the stations, we observed no sperm whales accompanied by young in late winter and spring.

Delphinus delphis, common dolphin (figs. 4 and 11)

Tomilin (1957) placed the Pacific dolphin Delphinus delphis bairdi as a race of the common dolphin Delphinus delphis.

No common dolphins were identified in 1958. In 1959, 22 sightings were made between Point Reyes and San Miguel Island, Calif. Three groups were seen southwest of San Miguel Island in January, at distances of 12, 23, and 24 miles offshore. In February 14 groups were sighted between Point Conception and Cape San Martin, from 15 to 40 miles offshore, and one group 23 miles southwest of Point Reyes. Four groups were sighted in March, three about 26 miles southwest of Pigeon Point and one 5 miles west of Cape San Martin. In 1961, six groups were sighted between San Nicolas Island and Monterey Bay. Two concentrations were observed, one of about 200 animals, 10 miles south of San Nicolas Island, and one of about 100, 20 miles west of Morro Bay. None was found inside the 100-fm. curve. Group size ranged from 4 to over 100. Common dolphins and Pacific striped dolphins were commonly found in mixed groups. We collected four common dolphins as follows:

Tac 59-1 B.--Female; 5 February 1959; position, lat. 35° 04' N., long. 121° 30' W., 37 miles west of Point San Luis, 5 in group. Tooth counts (first figure, number of visible teeth; second figure, in parenthesis, number of teeth below the gum line; third figure, total tooth count): upper jaw--right 48(3)51, left 48(5)53; lower jaw--right 46(3)49, left 49(2)51. Stomach contents: unidentified fish otoliths.

Tac 59-2 B.--Male; 6 February 1959; position, lat. 35° 05' N., long 121° 35' W., 41 miles west of Point San Luis; 20 plus in group. Tooth counts (visible teeth only): upper jaw--right 40, left 40; lower jaw--right 42, left 41. Stomach contents (volume 1,400 cc.): 60 percent lanternfish (Myctophidae); 40 percent squid (Gonatus sp., 20 percent; Onychoteuthis sp., 10 percent; unidentified squid, 10 percent).

Tac 59-3 B.--Female; 22 February 1959; position, lat. 35° 31' N., long. 121° 35' W., 18 miles southwest of Point Piedras Blancas; 30 in group. Tooth counts; upper jaw--right 42(6)48, left 44(6)50; lower jaw--right 48(2)50, left 47(3)50. Stomach contents (volume 200 cc.): 60 percent squid, 25 percent saury (Cololabis saira), 15 percent anchovy.

MS 59-4.--Male; 20 March 1959; position, lat. 35° 52' N., long. 121° 31' W., 5 miles west of Cape San Martin; 15-20 in group. Stomach contents (volume 690 cc.): 90 percent squid (Loligo opalescens) and 10 percent saury.

Lissodelphis borealis, northern right whale dolphin (figs. 3 and 11)

This species was seen once on 13 March 1958, when several individuals appeared together with Pacific striped dolphins (Lagenorhynchus obliquidens) in a large school of Risso's dolphins (Grampus griseus), about 35 miles southwest of Point Arena. In 1959, three observations were made: on 3 February a school of more than 100 animals 45 miles west of Morro Bay; on 4 February a congregation of more than 100 right whale dolphins and more than 50 Risso's dolphins was seen 60 miles west of Morro Bay; and the third group, which had more than 10 animals, was seen on 5 February, 40 miles southwest of Morro Bay. On 18 January 1961, a mixed school of about

Table 1.--Number and location of Physeter catodon observed

Date	Number seen	Location
		Latitude Longitude
1958		
5 Feb.	1	48°02'N., 125°24'W.
		30 miles WNW James Island
20 "	1	40°58'N., 125°05'W.
		41 miles W Trinidad Head
27 "	6-10	36°04'N., 122°13'W.
		21 miles SW Point Sur
10 Mar.	7	36°30'N., 122°39'W.
		35 miles WNW Point Sur
13 "	5	35°55'N., 122°30'W.
		38 miles SW Point Sur
13 "	4	35°53'N., 122°35'W.
		40 miles SW Point Sur
13 "	1	35°46'N., 122°48'W.
		55 miles SW Point Sur
14 "	1	36°43'N., 123°17'W.
		65 miles W Point Pinos
16 "	2	37°36'N., 124°04'W.
		56 miles SW Point Reyes
13 Apr.	3	41°12'N., 125°09'W.
		46 miles WNW Trinidad Head
1959		
17 Mar.	4	41°12'N., 125°48'W.
		75 miles W Trinidad Head
19 "	1	44°35'N., 124°50'W.
		33 miles WSW Yaquina Head
9 Apr.	1	44°12'N., 125°03'W.
		40 miles W Heceta Head
10 "	1	44°26'N., 124°57'W.
		40 miles WSW Yaquina Head
22 "	1	47°23'N., 124°51'W.
		22 miles W Cape Elizabeth
1961		
17 Jan.	3	35°34'N., 122°10'W.
		45 miles WSW Pt. Piedras Blancas
17 "	2	35°20'N., 122°15'W.
		52 miles SW Pt. Piedras Blancas
7 Mar.	1	37°53'N., 123°25'W.
		21 miles WSW Point Reyes
25 "	5	37°08'N., 123°25'W.
		50 miles W Pigeon Point
13 Apr.	1	43°40'N., 124°47'W.
		43 miles SW Heceta Head

Table 2. --Number and location of Delphinus delphis observed

Date	Number seen	Location	
1959		Latitude	Longitude
22 Jan.	10	33°53' N,	120°37' W.
" "	6	33°45' N.,	120°46' W.
24 "	25	33°42' N.,	120°43' W.
5 Feb.	20+	35°06' N.,	121°30' W.
" "	6	34°53' N.,	121°37' W.
" "	Many	35°02' N.,	121°36' W.
" " (1-1/2 hrs. later)	10	" "	" "
6 "	6	35°04' N.,	121°34' W.
6 "	5	35°08' N.,	121°33' W.
" "	100+	35°09' N.,	121°35' W.
" " (1/2 hr. later)	20+	" "	" "
7 "	6	35°15' N.,	121°55' W.
14 "	6	35°16' N.,	121°35' W.
19 "	4	34°18'N.,	121°05' W.
22 "	30	35°31' N.,	121°35' W.
" "	Many	37°49' N.,	123°26' W.
28 "	5	35°45' N.,	121°40' W.
" "	4	35°45' N.,	121°44' W.
4 Mar.	4	36°55' N.,	122°49' W.
" "	10	37°00' N.,	122°52' W.
5 "	10	36°58' N.,	122°53' W.
20 "	10	35°52' N.,	121°31' W.
1961			
25 Jan.	12	34°28' N.,	121°09' W.
2 Feb.	200	33°04' N.,	119°33' W.
4 "	10	34°28' N.,	121°03' W.
11 "	6	35°46' N.,	121°49' W.
18 "	100	35°13' N.,	121°13' W.
21 Mar.	5	35°45' N.,	122°30' W.

Table 3. --Sizes of four Delphinus delphis

Measurements	Tac 59-1 B ♀	Tac 59-2 B ♂	Tac 59-3 B ♀	MS 59-4 B ♂
Length	Cm.	Cm.	Cm.	Cm.
Snout to tail notch	151.0	178.0	181.0	161.3
Length of beak	-	11.2	13.1	-
Snout to gape	-	23.0	23.5	-
Snout to eye (center)	-	26.0	28.2	26.7
Snout to blowhole	27.0	29.0	31.4	-
Snout to insertion of flipper	38.7	39.5	39.4	-
Tail notch to tip of fin	58.5	82.5	81.5	66.0
Tail notch to anus	46.0	54.0	52.8	45.7
Tail notch to genital opening	49.5	69.5	58.7	55.9
Tail notch to umbilicus	79.0	100.0	99.0	82.6
Height of fin	16.0	21.0	21.2	19.1
Length of base of fin	21.0	23.5	28.5	22.2
Length of flipper (insertion to tip)	25.0	27.0	30.0	27.3
Width of flipper (widest part)	8.9	10.0	9.6	8.9
Girth immediately behind flipper	89.5	103.5	102.3	91.4
Weight	Kg.	Kg.	Kg.	Kg.
Liver	1.35	2.0	1.75	1.15
Heart	0.45	0.55	0.55	0.3
Lungs	1.35	1.75	1.6	1.7
Kidneys	0.25	0.55	0.55	0.3
Total weight of animal	50.0	72.5	78.5	58.0

Table 4. --Number and location of Lissodelphis borealis observed

Date	Number seen	Location	
		Latitude	Longitude
1958			
13 Mar.	Several	38°30' N.,	124°15' W.
1959			
3 Feb.	100+	35°17' N.,	121°44' W.
4 "	100+	35°12' N.,	122°04' W.
5 "	10+	35°01' N.,	121°33' W.
1961			
18 Jan.	25	35°17'N.,	122°06' W.
10 Feb.	20	35°27' N.,	121°48' W.

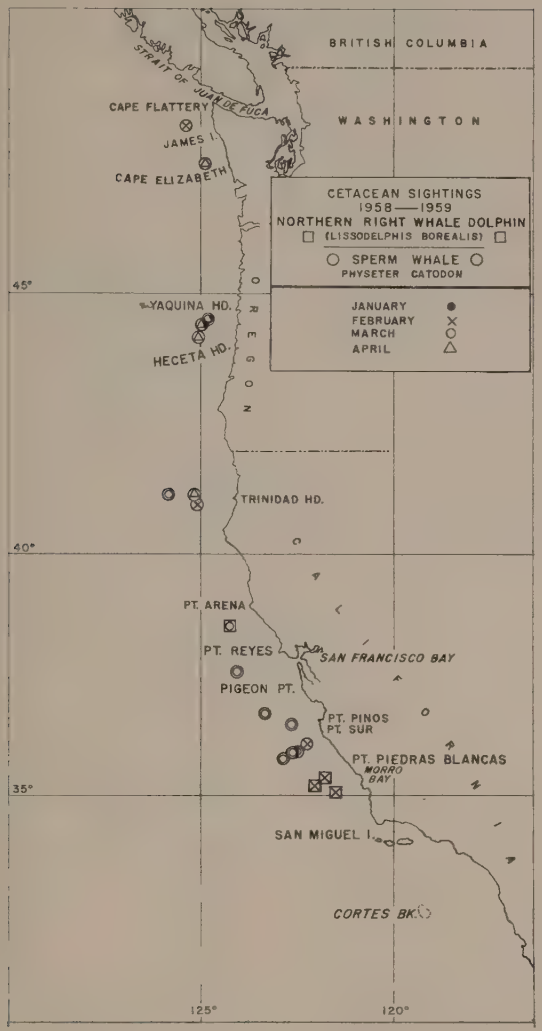

Figure 3.--Northern right whale dolphin and sperm whale sightings (1958-59).

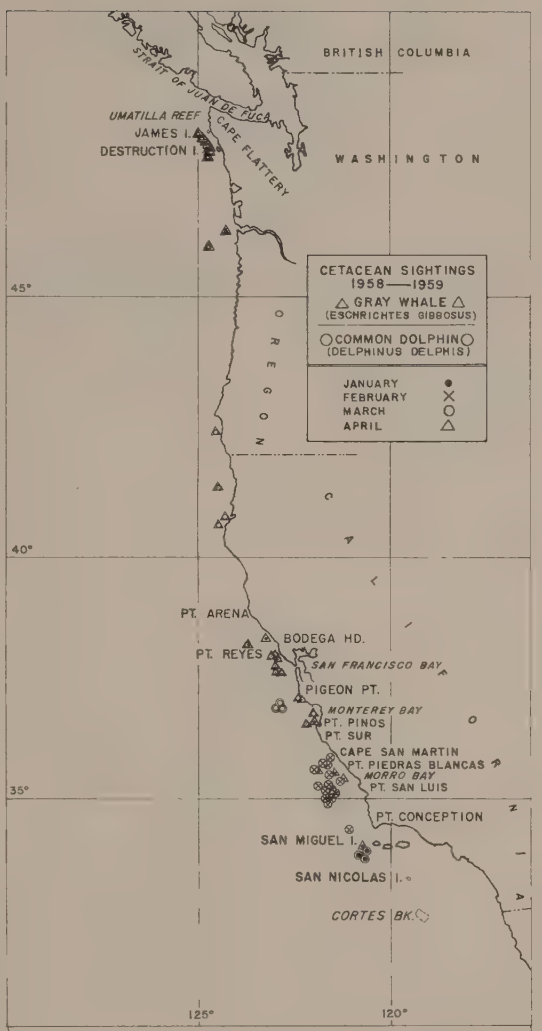

Figure 4.--Gray whale and common dolphin sightings (1958-59).

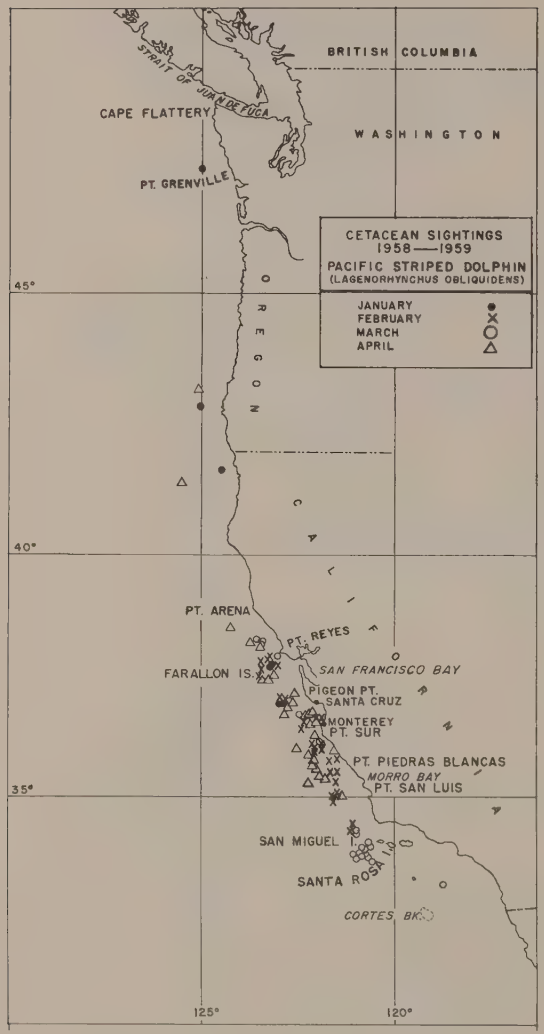

Figure 5.--Pacific striped dolphin sightings (1958-59).

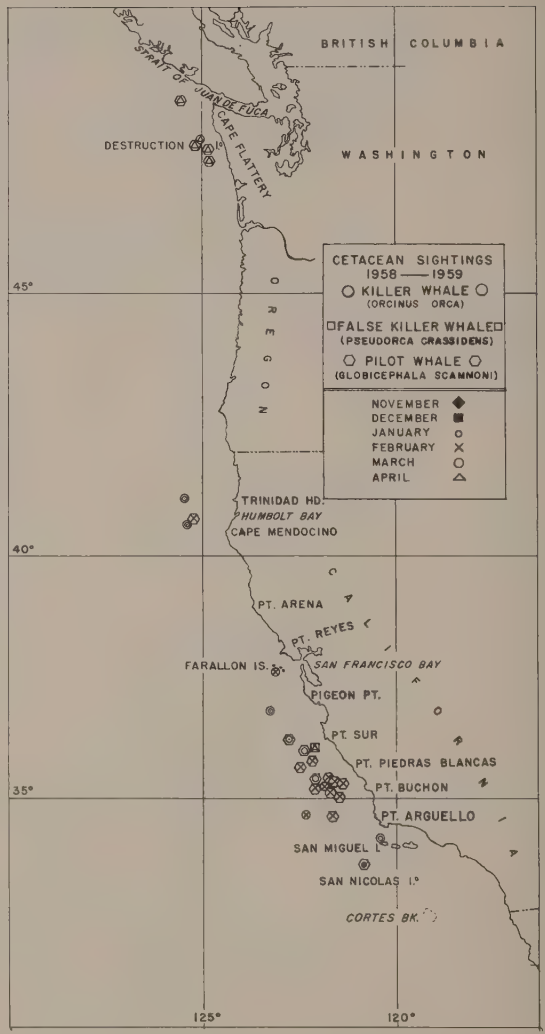

Figure 6.--Killer whale, false killer whale, and pilot whale sightings (1958-59).

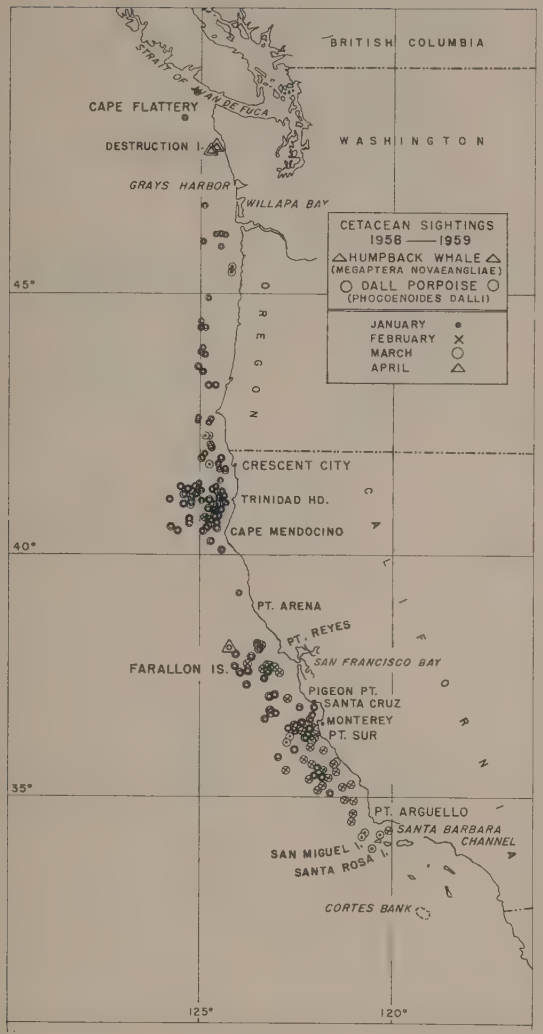

Figure 7.--Humpback whale and Dall porpoise sightings (1958-59).

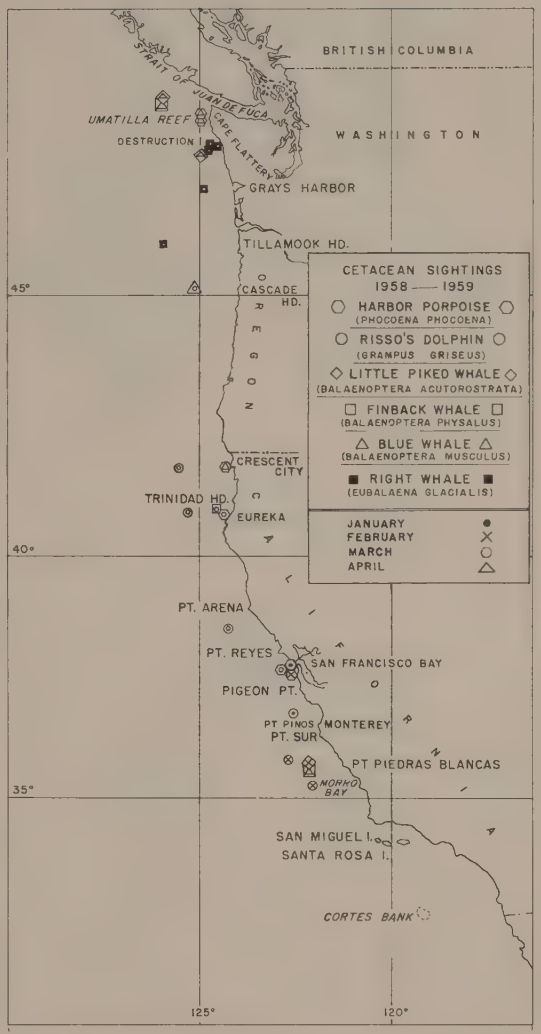

Figure 8.--Harbor porpoise, Risso's dolphin, little piked whale, finback whale, right whale, and blue whale sightings (1958-59).

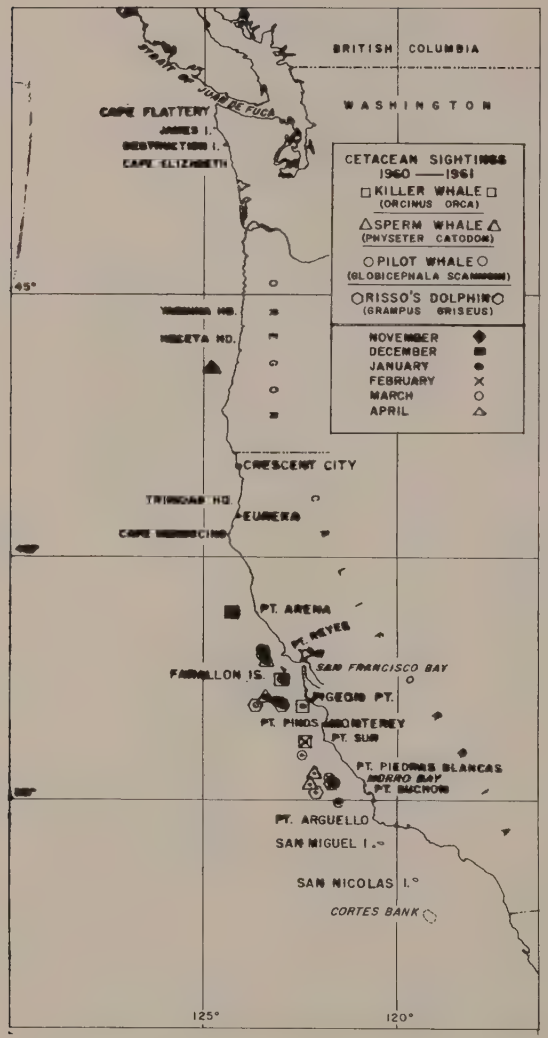

Figure 9.--Killer whale, sperm whale, pilot whale, and Risso's dolphin sightings (1960-61).

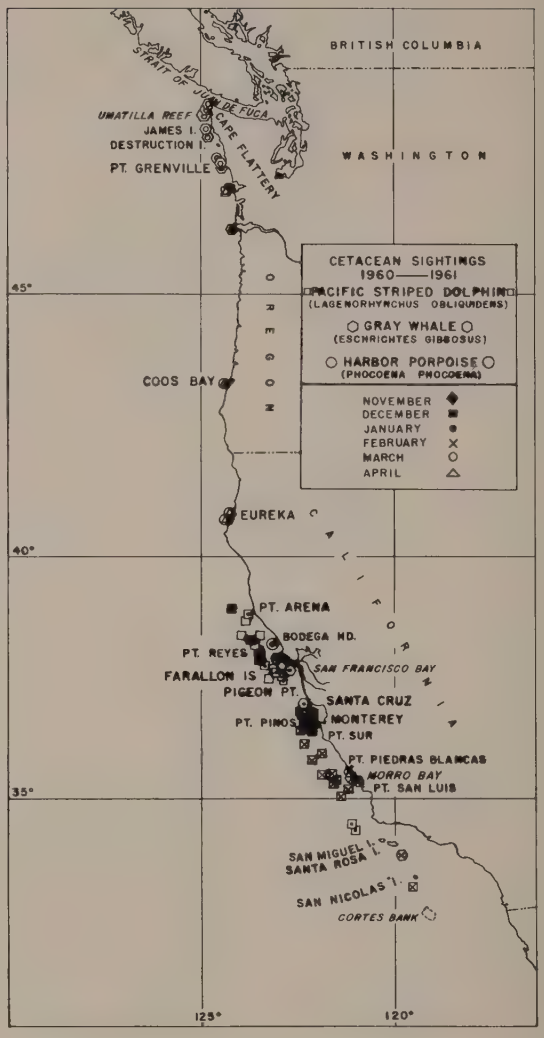

Figure 10.--Pacific striped dolphin gray whale, and harbor porpoise sightings (1960-61).

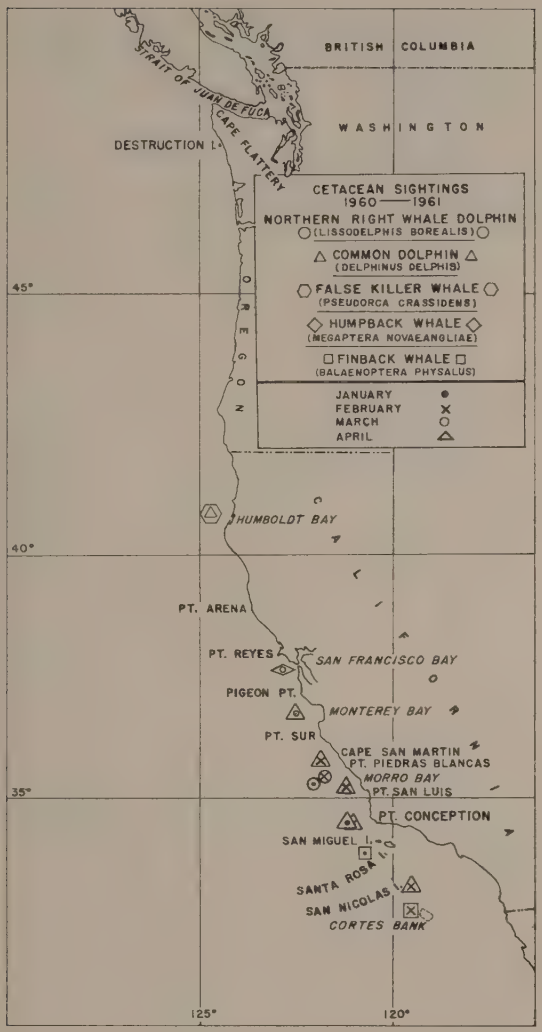

Figure 11.--Northern right whale dolphin, common dolphin, false killer whale, humpback whale, and finback whale sightings (1960-61).

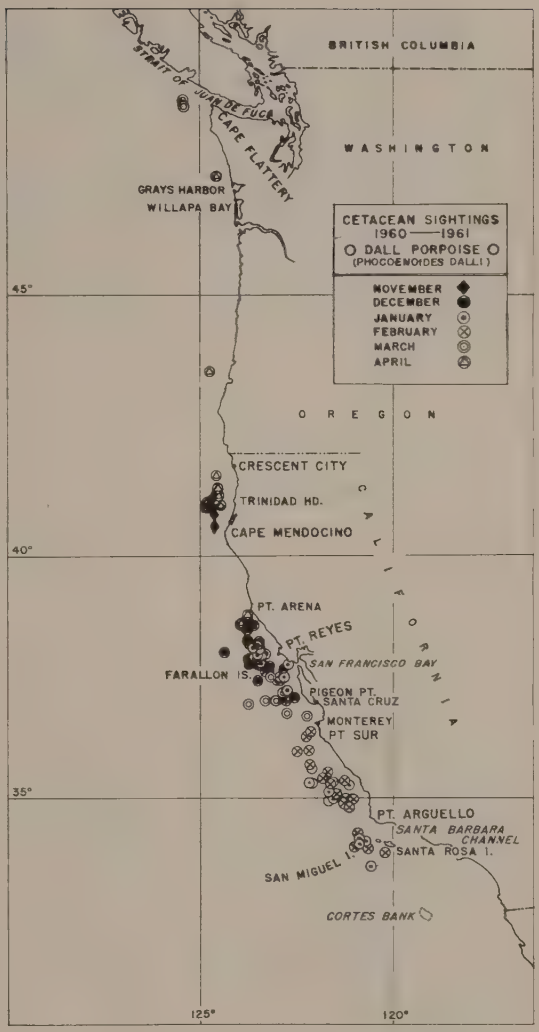

Figure 12.--Dall porpoise sightings (1960-61).

25 right whale dolphins and 75 Risso's dolphins was sighted 45 miles west-southwest of Point Piedras Blancas; on 10 February 1961, a mixed school of about 20 right whale dolphins, 50 Risso's dolphins, and 25 pilot whales was sighted 30 miles west-southwest of Point Piedras Blancas.

The right whale dolphin is said to be a northern cold water form (Norris and Prescott, 1961), but the animal was only observed off California. There it cannot be considered as rare as published records would indicate. Although most observations are confined to areas occupied by Arctic waters, its distribution suggests a temperate rather than a northern form.

Lagenorhynchus obliquidens, Pacific striped dolphin (figs. 5 and 10)

Pacific striped dolphins were observed on 135 occasions. The northernmost observation was off Point Grenville, Wash. (lat. 47° 15' N., long. 124° 14' W.). The number of striped dolphins in a group varied from 1 to 500+; groups of 20 to 100 were common.

Few striped dolphins were seen inside the 100-fm. or outside the 1,000-fm. curve. The largest numbers of striped dolphins were seen between San Miguel Island and San Francisco, an area extensively covered each year. In 1959, concentrations of this species were observed 25 miles southwest of Santa Rosa Island, 30 miles south of Point San Luis, 35 miles southwest of Point Sur, off Monterey, and off the Farallon Islands. At the time of observations, anchovy schools were abundant in these areas. Many other marine mammals and birds were also present. Again in 1961 concentrations were observed off the Farallon Islands and Monterey. On one occasion a mixed school of about 400 Pacific striped dolphins and more than 100 common dolphins were observed 20 miles west of Morro Bay. North of San Francisco, only occasional small groups of Pacific striped dolphins have been seen. It has not been observed in Alaska waters from fur seal investigation vessels. We collected five Pacific striped dolphins as follows:

Tac 59-1 PStr.--Female, apparently nulliparous, numerous follicles in both ovaries; 14 February 1959; position, lat. 35° 16' N., long. 121° 35' W., about 35 miles west of Morro Bay; single animal sighted. Tooth count: upper jaw--right 25(3)28, left 25(3)28; lower jaw--right 26(3)29, left 26(3)29. Stomach contents: trace of squid.

Tac 59-2 PStr.--Male, testes 13.5 by 40.0 mm.; 22 February 1959 ; position, lat. 35°28' N., long 121°38' W., 40 miles northwest of Morro Bay; three in group. Tooth count: upper jaw--right 28(2)30, left 29(2)31; lower jaw--right 29(2)31, left 29(2)31. Stomach contents (volume 1,600 cc.); 95 percent anchovy, 5 percent hake (Merluccius productus), and trace of squid.

Tac 59-3 PStr.--Female, nulliparous, barely visible follicles in left ovary; 27 February 1959; position, lat. 35° 42' N., long. 121° 41' W., 20 miles west of Point Piedras Blancas; 20 in group. Tooth count; upper jaw--right 29(2)31, left 28(3)31; lower jaw--right 31(2)33, left 30(2)32. Stomach contents (volume 33 cc.); 50 percent squid and 50 percent anchovy remains.

Tac 59-4 PStr.--Female, multiparous, follicles in both ovaries; 5 March 1959; position, lat. 36° 58' N., long. 122° 53' W., 47 miles west of the city of Santa Cruz; 20 in group. Tooth count: upper jaw--right 30(2)32, left 29(3)32; lower jaw--right 28(2)30, left 29(2)31. Stomach contents (volume 1,090 cc.): 45 percent squid (Gonatus sp.), 45 percent anchovy, and 10 percent hake.

MS 59-1 PStr.--Male; 4 March 1959; position, 36° 55' N., 122° 41' W., 20 miles west of Santa Cruz. Stomach contents: trace of squid.

Orcinus orca, killer whale (figs. 6 and 9)

Following Norris and Prescott (1961) we use the specific name orca rather than rectipinna.

We collected an adult male killer whale 9 March 1961, 13 miles off the Farallon Islands, Calif. (lat. 37° 29' N., long. 122° 58' W.). Tooth count: upper jaw--right 11, left 11, total 22; lower jaw--right 12, left 12, total 24. Stomach contents: The animal had not fed immediately before capture and we found no flesh in its stomach. The 2 gallons of material in its stomach consisted of two pellets of birdshot and some less easily digestible parts of several animals. These parts can be divided into seven categories:

1. Fragment of a hide 83 by 35 cm. and 6-10 mm. thick. The hair is short, averaging about 6 mm. long; individual hairs are stout and sword shaped. The overall color is grayish brown. The skin was compared with skin samples from Callorhinus, Zalophus, Eumetopias, Phoca, and Mirounga. It most closely resembles Mirounga.
2. Claws: 5 claws believed to be from a sea lion (species ?) and 36 claws believed to be from 4 elephant seals.
3. Vibrissae: 28 vibrissae from one or more elephant seals and numerous vibrissae representing one or more sea lions.

Table 5. --Number and location of Lagenorhynchus obliquidens observed

Date	Number seen	Location	
1958		Latitude	Longitude
6 Feb.	24	37°41' N.	123°05' W.
27 "	5	36°01' N.	122°00' W.
28 "	10	36°05' N.	122°07' W.
10 Mar.	75+	36°43' N.	122°20' W.
13 "	3	36°15' N.	122°03' W.
" "	several	38°30' N.	124°15' W.
16 "	6	35°15' N.	122°15' W.
" "	6	35°45' N.	122°12' W.
" "	12	35°41' N.	122°10' W.
" "	6-10	35°36' N.	122°06' W.
18 "	10	37°35' N.	123°05' W.
23 "	8	35°00' N.	121°22' W.
24 "	3	36°42' N.	122°50' W.
" "	50-100	35°20' N.	121°54' W.
25 "	15-20	36°41' N.	122°07' W.
" "	100+	36°35' N.	122°08' W.
" "	12	36°33' N.	122°13' W.
" "	2	36°32' N.	122°15' W.
" "	5	36°32' N.	122°17' W.
26 "	200+	35°58' N.	122°31' W.
28 "	200+	36°43' N.	122°12' W.
9 Apr.	6	36°59' N.	122°59' W.
13 "	3	41°40' N.	124°28' W.
16 "	13	42°54' N.	125°04' W.
25 "	70+	47°15' N.	125°00' W.
1959			
19 Jan.	4	38°16' N.	123°34' W.
20 "	2	36°12' N.	121°57' W.
" "	8	36°05' N.	121°57' W.
21 "	5	34°16' N.	121°03' W.
" "	3	34°12' N.	121°03' W.
" "	3	33°57' N.	120°40' W.
" "	20	33°53' N.	120°40' W.
22 "	Many	33°43' N.	120°44' W.
" "	"	33°38' N.	120°59' W.
" "	6	33°44' N.	120°50' W.
23 "	50	33°46' N.	120°58' W.

Date	Number seen	Location	
1959		Latitude	Longitude
23 Jan.	20	33°49' N.	120°54' W.
" "	30	33°43' N.	121°01' W.
" "	15	33°52' N.	120°46' W.
" "	100+	33°53' N.	120°50' W.
24 "	80	33°41' N.	120°44' W.
" "	100+	33°45' N.	120°55' W.
25 "	6	35°57' N.	122°00' W.
27 "	5	36°43' N.	122°31' W.
" "	24	36°59' N.	122°46' W.
28 "	8	33°05' N.	118°44' W.
29 "	8	36°59' N.	122°53' W.
" "	3	37°00' N.	122°54' W.
31 "	10	37°40' N.	123°15' W.
1 Feb.	10	37°48' N.	123°10' W.
" "	8	37°46' N.	123°13' W.
" "	40	35°04' N.	121°30' W.
" "	Many	35°05' N.	121°40' W.
4 "	10	37°56' N.	123°24' W.
5 "	20	34°53' N.	121°37' W.
" "	Many	35°02' N.	121°36' W.
7 "	6	37°39' N.	123°23' W.
11 "	10	36°31' N.	122°18' W.
" "	4	36°32' N.	122°15' W.
12 "	4	36°35' N.	122°09' W.
13 "	100+	35°59' N.	122°08' W.
14 "	1	35°16' N.	121°35' W.
" "	10+	36°05' N.	122°06' W.
19 "	12	36°38' N.	122°02' W.
" "	2	34°18' N.	121°05' W.
" "	2	34°17' N.	121°05' W.
22 "	Many	37°49' N.	123°26' W.
" "	10	35°31' N.	121°35' W.
" "	3	35°28' N.	121°38' W.
24 Feb.	8	37°45' N.	123°48' W.
25 "	Many	36°39' N.	122°02' W.
27 "	20	35°42' N.	121°41' W.
28 "	4	35°45' N.	121°34' W.
1 Mar.	15	38°06' N.	123°28' W.

Table 5.--Number and location of Lagenorhynchus obliquidens observed--Continued

Date	Number seen	Location	
1959		Latitude	Longitude
4 Mar.	4-6	36°55' N.,	122°41' W.
" "	15	36°55' N.,	122°49' W.
5 "	20	36°58' N.,	122°53' W.
6 "	3	37°09' N.,	122°36' W.
12 "	15	37°31' N.,	123°21' W.
" "	4	37°31' N.,	123°22' W.
12 "	15	38°13' N.,	123°42' W.
17 "	10	43°15' N.,	125°03' W.
19 "	4	41°25' N.,	125°30' W.
20 "	10	35°52' N.,	121°31' W.
1960			
27 Nov.	3	38°50' N.,	124°14' W.
" "	40	38°21' N.,	123°42' W.
28 "	20	37°52' N.,	123°39' W.
5 Dec.	6	38°18' N.,	123°38' W.
" "	6	38°40' N.,	123°49' W.
6 "	3	38°23' N.,	123°27' W.
10 "	10	37°46' N.,	122°55' W.
" "	6	37°46' N.,	122°54' W.
14 "	6	37°31' N.,	123°13' W.
1961			
6 Jan.	4	37°54' N.,	123°26' W.
7 "	5	37°44' N.,	123°11' W.
" "	4	37°37' N.,	123°04' W.
" "	8	37°36' N.,	123°02' W.
" "	14	37°36' N.,	123°02' W.
" "	500+	37°30' N.,	122°47' W.
8 "	25	37°41' N.,	123°08' W.
9 "	25	38°11' N.,	123°35' W.
11 "	2	38°04' N.,	123°31' W.
" "	10	38°04' N.,	123°29' W.

Date	Number seen	Location	
1961		Latitude	Longitude
12 Jan.	200+	37°42' N.,	123°15' W.
" "	12	37°29' N.,	122°56' W.
" "	50	37°32' N.,	122°53' W.
16 "	2	36°51' N.,	122°18' W.
25 "	3	34°26' N.,	121°08' W.
29 "	8	34°20' N.,	121°00' W.
2 Feb.	25	33°04' N.,	119°33' W.
7 "	2	35°03' N.,	121°23' W.
11 "	5	35°55' N.,	121°55' W.
" "	12	36°25' N.,	122°07' W.
15 "	100+	36°33' N.,	122°03' W.
16 "	3	35°27' N.,	121°57' W.
" "	7	35°26' N.,	121°50' W.
" "	6	35°25' N.,	121°45' W.
" "	8	35°25' N.,	121°40' W.
" "	5	35°25' N.,	121°38' W.
" "	8	35°23' N.,	121°34' W.
18 "	400	35°13' N.,	121°13' W.
19 "	12	35°27' N.,	121°39' W.
21 "	11	35°22' N.,	121°34' W.
24 "	10	35°48' N.,	122°09' W.
25 "	6	36°08' N.,	122°22' W.
" "	8	36°26' N.,	122°26' W.
27 "	4	36°42' N.,	122°07' W.
" "	3	36°44' N.,	122°13' W.
" "	3	36°44' N.,	122°17' W.
" "	3	36°44' N.,	122°19' W.
" "	2	36°45' N.,	122°23' W.
" "	25	36°46' N.,	122°25' W.
" "	6	36°47' N.,	122°27' W.
2 Apr.	15	38°50' N.,	123°48' W.
10 "	1	46°53' N.,	124°17' W.

Table 6. --Sizes of five Lagenorhynchus obliquidens

Measurements	Tac 59-1 PStr. ♀	Tac 59-2 PStr. ♂	Tac 59-3 PStr. ♀	Tac 59-4 PStr. ♀	MS 59-1 PStr. ♂
Length	Cm.	Cm.	Cm.	Cm.	Cm.
Snout to tail notch	183.0	181.3	169.5	182.4	163.0
Length of beak	2.4	3.7	3.3	3.0	-
Snout to gape	21.4	20.6	20.0	21.7	-
Snout to eye (center)	25.5	24.5	23.0	23.8	26.6
Snout to blowhole	21.3	27.5	27.1	23.0	20.4
Snout to insertion of flipper	40.0	41.3	36.1	39.1	40.5
Tail notch to tip of fin	72.0	77.0	71.1	76.0	76.3
Tail notch to anus	50.2	50.5	46.5	51.0	45.6
Tail notch to genital slit	54.0	66.4	51.9	57.9	58.5
Tail notch to umbilicus	95.8	95.5	90.2	97.3	87.8
Height of fin	18.2	18.6	19.8	21.2	17.8
Length of base of fin	27.5	25.3	28.2	31.0	24.2
Length of flipper (insertion to tip)	33.7	35.0	35.1	33.5	30.5
Width of flipper (widest part)	11.0	11.8	10.9	10.8	11.4
Girth (immediately behind flipper)	102.2	105.8	105.5	110.9	98.0
Weight	Kg.	Kg.	Kg.	Kg.	Kg.
Liver	1.95	2.0	2.05	2.15	-
Heart	0.7	0.8	0.62	0.65	-
Lungs	2.0	2.0	1.85	2.3	-
Kidneys	0.6	0.65	0.55	0.7	-
Total weight of animal	84.0	90.5	85.0	88.0	72.0

Table 7. --Number and location of Orcinus orca observed

Date	Number seen	Location
1958		Latitude Longitude
19 Mar.	1	34°05' N., 120°25' W. 3 miles N San Miguel Island
24 "	3	36°50' N., 123°15' W. 45 miles SW Pigeon Point
29 Apr.	1	47°47' N., 125°00' W. 22 miles WNW Destruction Is.
1959		
6 Feb.	2	35°15' N., 121°54' W. 50 miles W Point Buchon
13 "	6	37°39' N., 123°06' W. 6 miles WSW Farallon Islands
20 "	3	34°39' N., 122°21' W. 80 miles W Point Arguello
19 Mar.	15	40°38' N., 125°21' W. 44 miles WNW Cape Mendocino
28 "	3	41°09' N., 125°22' W. 55 miles W. Trinidad Head
1960		
6 Dec.	6	38°51' N., 124°15' W. 25 miles W. Point Arena
1961		
16 Jan.	5	36°57' N., 122°24' W. 15 miles SSW Pigeon Point
15 Feb.	2	36°12' N., 122°20' W. 25 miles WSW Point Sur
9 Mar.	15	37°29' N., 122°58' W. 32 miles SSW Point Reyes

Table 8. --Size of Orcinus orca

Measurements	
Length	Cm.
Snout to tail notch	760.0
Snout to gape	74.0
Snout to eye (center)	83.0
Snout to blowhole	87.0
Snout to ear (?)	111.0
Snout to insertion of flipper	145.0 (?)
Snout to tip of fin	370.0
Tail notch to anus	249.0
Tail notch to genital slit	337.0
Tail notch to umbilicus	450.0
Tail notch to forward edge of tail	62.0
Width of tail (tip to tip)	273.0
Height of fin	166.0
Length of base of fin	117.0
Length of flipper (insertion to tip of frontal edge)	205.0
Length of flipper (insertion to tip of rear edge)	180.0
Width of flipper (closest to body)	44.0
Width of flipper (widest part)	122.0
Girth immediately behind flippers	469.0
Weight	Kg.
Liver	69.0
Heart	32.0
Lungs	76.0
Kidneys	72.0
Testes	42.0 (left 22.0 right 20.0)
Total weight of animal (no estimate made for loss of body fluids)	6,964.0

4. Teeth: Two lower canines, one upper canine, and one incisor from a 9-year-old (?) male California sea lion.

5. Fragments of one or more cetaceans, possibly Dall porpoise.

6. Miscellaneous bone fragments that could not be specifically identified with material at hand.

7. Loose hairs found in the small intestine, averaging about 15 mm. in length and grayish in color, were from a sea lion, probably Zalophus.

After examining the material, we concluded that the whale had recently consumed at least one California sea lion, one cetacean, and possibly as many as four elephant seals. For identification the stomach contents were compared with material in the Bureau of Commercial Fisheries Marine Mammal Biological Laboratory collection.

Grampus griseus, Risso's dolphin
(figs. 8 and 9)

Risso's dolphins were seen on several occasions with other dolphins. In 1958, the only Risso's dolphins observed were in company of Pacific striped and right whale dolphins. On

Table 9. --Number and location of Grampus griseus observed

Date	Number seen	Location
1958		Latitude Longitude
18 Mar.	Many	38°30' N., 124°15' W. 35 miles SW Point Arena
1959		
27 Jan.	3	36°45' N., 122°33' W. 31 miles WNW Point Pinos
4 Feb.	50+	35°12' N., 122°04' W. 60 miles W Morro Bay
8 "	2	35°44' N., 122°43' W. 55 miles SW Point Sur
18 Mar.	10+	41°42' N., 125°33' W. 62 miles W Crescent City
28 "	5	40°52' N., 125°19' W. 50 miles W Eureka
1961		
18 Jan.	75	35°13' N., 122°05' W. 50 miles SW Pt. Piedras Blancas
10 Feb.	50 (plus right whale dolphins and pilot whales)	35°27' N., 121°48' W. 31 miles SW Pt. Piedras Blancas
20 Mar.	8	36°56' N., 123°39' W. 60 miles WSW Pigeon Point
27 "	5	37°04' N., 123°05' W. 32 miles W. Pigeon Point

one occasion in 1959, over 50 Risso's dolphins were in a mixed school of more than 100 right whale dolphins and over 30 pilot whales; on another occasion, these dolphins were sighted in company with pilot whales. In 1961 a mixed school of Risso's dolphins, right whale dolphins, and pilot whales was seen.

Hall and Kelson (1959) gave the range of G. griseus as extending north in the Pacific to Monterey. Our observations made in March 1959 extend the known range to Crescent City, Calif., about 300 miles north of Monterey.

Pseudorca crassidens, false killer whale (figs. 6 and 11)

The false killer whale was not well known to the observers, and they were hesitant to identify them unless the animals were very clearly seen. This species may be more abundant off California, and perhaps off Oregon and Washington, than the records suggest. Possibly some were identified as Globicephala, which is similar in color and appearance.

Table 10. --Number and location of Pseudorca crassidens observed

Date	Number seen	Location
1958		Latitude Longitude
13 Mar.	2	36°04' N., 122°07' W. 18 miles SW Point Sur
1961		
8 Apr.	2	40°47' N., 124°41' W. 20 miles W Humboldt Bay

Globicephala scammoni, Pacific pilot whale (figs. 6 and 9)

The following observations of the Pacific pilot whale are too limited by season to provide good information on distribution. In general, pilot whales can be expected throughout the winter off central California. They were not seen off Washington before mid-April.

Table 11.--Number and location of Globicephala scammoni observed

Date	Number seen	Location
1958		Latitude Longitude
10 Mar.	2	36°13' N., 122°45' W.
		40 miles W Point Sur
16 "	20-25	35°57' N., 122°20' W.
		30 miles SW Point Sur
29 Apr.	1	47°44' N., 125°00' W.
		21 miles WNW Destruction Is.
" "	1	47°42' N., 124°59' W.
		20 miles W Destruction Is.
1959		
24 Jan.	5	33°34' N., 120°50' W.
		35 miles SW San Miguel Is.
3 Feb.	20	35°17' N., 121°39' W.
		38 miles W Point Buchon
4 "	20-30	35°19' N., 121°49' W.
		46 miles W Point Buchon
4 "	30+	35°12' N., 122°04' W.
		59 miles W Point Buchon
4 "	10	35°07' N., 121°43' W.
		41 miles WSW Point Buchon
5 "	15+	35°01' N., 121°33' W.
		36 miles SW Point Buchon
7 "	8	35°37' N., 122°29' W.
		60 miles W Pt. Piedras Blancas
13 "	2	35°45' N., 122°11' W.
		46 miles W Pt. Piedras Blancas
20 "	8	34°35' N., 121°39' W.
		50 miles W Point Arguello
26 "	10	35°18' N., 121°24' W.
		26 miles W Point Buchon
17 Mar.	20-25	35°24' N., 122°06' W.
		44 miles SW Pt. Piedras Blancas
28 "	6	40°42' N., 125°17' W.
		44 miles WNW Cape Mendocino
19 Apr.	20	47°38' N., 124°46' W.
		12 miles W Destruction Island
22 "	1	48°28' N., 125°30' W.
		32 miles W Cape Flattery

Table 11.--Number and location of Globicephala scammoni observed--Continued

Date	Number seen	Location
1960		Latitude Longitude
5 Dec.	8	38°09' N., 123°34' W.
		32 miles WNW Point Reyes
1961		
11 Jan.	8	38°00' N., 123°24' W.
		22 miles W Point Reyes
17 "	15	35°59' N., 122°27' W.
		35 miles SW Point Sur
20 "	15	34°54' N., 121°35' W.
		53 miles WNW Point Arguello
2 Feb.	6	33°10' N., 119°27' W.
		5 miles S San Nicolas Island
10 "	25	35°27' N., 121°48' W.
		30 miles SW Pt. Piedras Blancas
19 Mar.	5	37°04' N., 123°13' W.
		43 miles W Pigeon Point

Phocoena phocoena, harbor porpoise
(figs. 8 and 10)

We follow Norris and McFarland (1958) in considering the harbor porpoises of the Pacific and Atlantic as the same species. Harbor porpoises were commonly seen in the San Francisco Bay entrance channel in 1958, 1959, and 1961. In 1959 and 1961, they were seen at Eureka, both inside the harbor and in the entrance channel. In April 1959, harbor porpoises were seen on several different occasions between Cape Flattery and the Umatilla lightship off Washington. Harbor porpoises were never seen to come close to the vessel or play about the ship's bow, as did the Dall porpoise and the Pacific striped and common dolphins.

Phocoenoides dalli, Dall porpoise
(figs. 7 and 12)

In the area traveled, Dall porpoises were sighted on 251 different occasions. Size of the groups varied from 1 to 24, with 4 to 5 animals being the average. The southernmost observation was made 31 January 1961 when 12 were seen 30 miles southwest of Santa Rosa Island (lat. 33° 30' N., long. 120° 29' W.). Two groups were sighted in the Santa Barbara channel on 25 January 1959, the easternmost in midchannel north of Santa Rosa Island. Groups were commonly seen west and southwest of San Miguel Island in 1959 and 1961.

Between Point Arguello and Point Reyes, sightings were made in January, February, March, and early April in 1958, 1959, 1961, and in December 1960. Few Dall porpoises were seen inside the 100-fm. curve, except in the vicinity of the Farallon Islands, and few were seen more than 60 miles offshore in this area. This porpoise did not appear to be concentrated in any particular locality, although we report more observations off the Farallons and off Monterey, because we spent more time in those areas.

Dall porpoises were sighted between Point Reyes and Cape Mendocino in December, January, February, March, and April.

The area between Cape Mendocino and the vicinity of Crescent City was covered rather intensively. Dall porpoises were sighted here during January, March, and April. None was seen inside the 100-fm. curve, and one group of three was seen on 22 March 1959, 75 miles west of Trinidad Head. Sightings were rather evenly distributed throughout the area within the described limits. Dall porpoises were sighted on three occasions in November 1960.

Although relatively little time was spent in Oregon waters in 1958, 1959, 1960, and 1961, 25 separate sightings were made during January, February, March, and April. Most cruises off Oregon were made parallel to the coast. All Dall porpoises observed were within 45 miles of shore.

Table 12. --Number and location of Phocoenoides dalli observed

Date	Number seen	Location	
1958		Latitude	Longitude
6 Feb.	12	37°41' N.,	123°05' W.
" "	24+	37°45' N.,	123°10' W.
9 "	2	37°45' N.,	123°15' W.
10 "	Not recorded	45°58' N.,	124°37' W.
13 "	8	36°18' N.,	122°03' W.
" "	4	36°12' N.,	122°04' W.
15 "	4	37°35' N.,	122°58' W.
" "	2	37°38' N.,	123°07' W.
" "	5	37°43' N.,	123°13' W.
20 "	Several	40°50' N.,	124°40' W.
26 "	Several	41°10' N.,	124°25' W.
" "	Several	40°57' N.,	124°38' W.
27 "	Several	40°40' N.,	124°50' W.
" "	4	36°18' N.,	122°00' W.
28 "	5	36°32' N.,	122°04' W.
1 Mar.	Several	40°55' N.,	124°51' W.
2 "	Several	41°16' N.,	124°39' W.
6 "	2	43°18' N.,	124°43' W.
6 "	Several	43°18' N.,	124°46' W.
7 "	Several	41°53' N.,	125°00' W.
8 "	4	37°56' N.,	123°43' W.
9 "	Many	40°38' N.,	124°39' W.
9 "	5	37°20' N.,	123°50' W.
" "	2	36°35' N.,	123°18' W.
10 "	Several	40°16' N.,	124°46' W.
" "	Several	40°08' N.,	124°29' W.
" "	2	36°32' N.,	122°28' W.
11 "	1	36°14' N.,	122°13' W.
" "	3	36°15' N.,	122°12' W.
" "	2	36°15' N.,	122°12' W.
" "	2	36°23' N.,	122°10' W.
12 "	Several	40°39' N.,	124°45' W.
" "	Several	40°39' N.,	124°45' W.
" "	Several	40°27' N.,	124°47' W.
14 "	Not recorded	37°57' N.,	124°07' W.
15 "	12	36°36' N.,	122°07' W.
" "	1	37°06' N.,	123°03' W.
" "	6	37°02' N.,	123°11' W.

Date	Number seen	Location	
1958		Latitude	Longitude
16 Mar.	3	37°35' N.,	124°00' W.
" "	4	35°25' N.,	122°01' W.
17 "	6	37°36' N.,	123°45' W.
24 "	4	36°45' N.,	123°02' W.
" "	2	35°03' N.,	121°36' W.
25 "	4	35°24' N.,	121°50' W.
" "	3	35°36' N.,	121°57' W.
26 "	6	35°47' N.,	122°55' W.
9 Apr.	2	37°05' N.,	122°43' W.
11 "	Group	39°13' N.,	124°00' W.
12 "	3	41°08' N.,	124°31' W.
" "	2	41°16' N.,	124°33' W.
" "	3	41°20' N.,	124°35' W.
" "	9	41°41' N.,	124°21' W.
13 "	2	41°48' N.,	124°30' W.
" "	7	42°06' N.,	124°39' W.
" "	6	42°10' N.,	124°40' W.
" "	3	42°37' N.,	124°42' W.
15 "	2	43°58' N.,	124°54' W.
" "	1	44°00' N.,	124°54' W.
" "	3	"	"
" "	5	44°23' N.,	124°56' W.
" "	5	42°02' N.,	124°50' W.
16 "	6	42°44' N.,	125°03' W.
17 "	7	44°31' N.,	124°59' W.
" "	4	46°08' N.,	124°25' W.
21 "	4	45°58' N.,	124°55' W.
22 "	5	45°55' N.,	124°28' W.
" "	5	46°03' N.,	124°20' W.
" "	3	46°09' N.,	124°36' W.
24 "	4	46°38' N.,	124°52' W.
1959			
18 Jan.	4	42°22' N.,	124°44' W.
" "	10	41°47' N.,	124°44' W.
20 "	4	36°00' N.,	121°41' W.
" "	6	45°29' N.,	124°08' W.
" "	8	45°27' N.,	124°08' W.

Table 12.--Number and location of Phocoenoides dalli observed--Continued

Date	Number seen	Location	
1959		Latitude	Longitude
21 Jan.	1	42°41' N.	124°42' W.
" "	6	42°21' N.	124°41' W.
" "	3	34°10' N.	120°46' W.
24 "	15	33°54' N.	120°29' W.
" "	2	36°16' N.	122°42' W.
" "	4	36°09' N.	122°45' W.
25 "	1	34°13' N.	120°17' W.
" "	10	34°15' N.	120°05' W.
27 "	10-15	36°45' N.	122°00' W.
" "	5	36°42' N.	122°15' W.
29 "	2	34°14' N.	120°40' W.
1 Feb.	3	34°59' N.	121°15' W.
3 "	2	35°11' N.	121°18' W.
" "	2	35°02' N.	121°36' W.
4 "	6+	35°07' N.	121°55' W.
7 "	10	35°24' N.	122°09' W.
" "	6	35°13' N.	121°48' W.
8 "	8	36°24' N.	122°21' W.
" "	3	36°28' N.	122°26' W.
" "	6	36°47' N.	123°08' W.
13 "	12	35°48' N.	122°18' W.
14 "	7	36°05' N.	122°06' W.
" "	4	35°23' N.	121°41' W.
18 "	1	34°55' N.	121°02' W.
" "	3	34°37' N.	121°04' W.
" "	4	34°29' N.	121°04' W.
21 "	6	38°10' N.	123°29' W.
" "	3	38°09' N.	123°28' W.
22 "	Many	37°49' N.	123°26' W.
" "	2	35°33' N.	121°28' W.
24 "	12	37°45' N.	123°48' W.
26 "	8	35°21' N.	121°04' W.
" "	10-12	36°33' N.	122°25' W.
27 "	3	35°33' N.	121°56' W.
" "	4	35°40' N.	121°48' W.
" "	6	35°43' N.	121°28' W.
28 Feb.	7	35°35' N.	122°42' W.
1 Mar.	12	35°59' N.	122°34' W.
" "	10	38°06' N.	123°28' W.
3 "	4-6	36°31' N.	122°23' W.
" "	2	36°29' N.	122°34' W.
4 "	9	36°43' N.	122°04' W.
6 "	3	36°53' N.	122°25' W.
10 "	3-4	36°49' N.	122°00' W.
12 "	6	37°31' N.	123°22' W.
" "	4	37°39' N.	123°15' W.
15 "	5	40°55' N.	124°30' W.
16 "	2	40°49' N.	124°35' W.
" "	5	40°49' N.	124°36' W.
" "	6	41°55' N.	124°31' W.
17 "	1	43°40' N.	125°05' W.
19 "	3	41°24' N.	125°30' W.
20 "	5	40°30' N.	125°38' W.
" "	4	40°35' N.	125°46' W.
" "	3	41°05' N.	125°46' W.
21 "	2	41°22' N.	125°10' W.
" "	4	41°11' N.	125°27' W.
" "	5	40°58' N.	125°27' W.
" "	2	40°58' N.	125°19' W.
" "	5	41°02' N.	125°17' W.
" "	3	41°09' N.	125°15' W.
22 "	3	41°05' N.	124°52' W.
" "	6	41°02' N.	124°41' W.
" "	3	41°01' N.	124°38' W.
26 "	3	40°29' N.	124°54' W.
28 "	9	40°36' N.	125°17' W.
" "	10	40°41' N.	125°17' W.
" "	4	41°17' N.	125°17' W.
29 "	6	41°22' N.	125°08' W.
31 "	2	37°42' N.	124°08' W.

Table 12.--Number and location of Phocoenoides dalli observed--Continued

Date	Number seen	Location	
		Latitude	Longitude
1959			
1 Apr.	1	41°19' N.	124°57' W.
4 "	4	41°26' N.	125°01' W.
" "	6	41°15' N.	125°07' W.
5 "	8	41°05' N.	124°59' W.
8 "	4	41°06' N.	124°23' W.
" "	20	41°10' N.	124°24' W.
" "	4	41°13' N.	124°25' W.
" "	4	41°28' N.	124°28' W.
9 "	6	43°33' N.	124°50' W.
" "	2	43°57' N.	124°53' W.
" "	4	43°57' N.	124°53' W.
10 "	3	44°24' N.	124°54' W.
12 "	4	44°58' N.	124°45' W.
20 "	4	48°11' N.	125°23' W.
24 "	3	48°37' N.	125°05' W.
1960			
26 Nov.	5	41°07' N.	124°38' W.
" "	4	40°49'N.	124°37' W.
" "	5	40°40' N.	124°37' W.
2 Dec.	3	37°49' N.	123°23' W.
3 "	4	37°08' N.	122°30' W.
4 "	3	37°43' N.	122°41' W.
5 "	2	38°03' N.	123°20' W.
" "	4	38°09' N.	123°34' W.
" "	4	38°12' N.	123°35' W.
" "	2	38°17' N.	123°38' W.
" "	4	38°32' N.	123°46' W.
7 "	4	38°15' N.	123°25' W.
" "	4	38°00' N.	123°32' W.
" "	4	37°58' N.	123°30' W.
9 "	4	37°48' N.	123°27' W.
10 "	2	37°45' N.	123°10' W.
11 "	4	37°57' N.	123°21' W.
12 "	4	38°37' N.	123°40' W.
" "	5	38°41' N.	123°44' W.
13 "	1	38°04' N.	124°20' W.
14 "	5	37°28' N.	123°26' W.

Date	Number seen	Location	
		Latitude	Longitude
1961			
6 Jan.	2	37°50' N.	123°25' W.
7 "	4	37°52' N.	123°27' W.
" "	4	37°52' N.	123°23' W.
" "	2	37°46' N.	123°15' W.
" "	1	37°30' N.	122°56' W.
" "	7	37°28' N.	122°51' W.
8 "	10	37°41' N.	123°08' W.
9 "	3	38°42' N.	123°50' W.
10 "	4	38°09' N.	123°29' W.
11 "	4	38°03' N.	123°27' W.
" "	9	38°01' N.	123°27' W.
" "	3	38°00' N.	123°28' W.
" "	7	38°01' N.	123°30' W.
12 "	2	37°44' N.	122°39' W.
15 "	3	37°32' N.	122°49' W.
" "	6	37°27' N.	122°53' W.
" "	4	37°12' N.	122°44' W.
17 "	1	35°39' N.	122°08' W.
18 "	5	35°17' N.	122°06' W.
19 "	6	35°07' N.	121°38' W.
20 "	6	34°57' N.	121°40' W.
22 "	6	34°00' N.	120°50' W.
24 "	5	34°05' N.	120°47' W.
25 "	15	34°59' N.	121°08' W.
29 "	20	35°16' N.	121°04' W.
30 "	7	34°05' N.	120°47' W.
" "	5	34°00' N.	120°44' W.
31 "	12	33°30' N.	120°29' W.
4 Feb.	7	33°52' N.	120°11' W.
" "	6	33°56' N.	120°39' W.
" "	2	34°00' N.	120°43' W.
" "	6	34°00' N.	120°44' W.
" "	5	34°15' N.	120°53' W.
5 "	6	34°47' N.	121°03' W.
" "	3	35°00' N.	121°01' W.
7 "	6	35°02' N.	121°34' W.
9 "	14	35°24' N.	121°47' W.
10 "	9	35°34' N.	121°42' W.

Table 12.--Number and location of Phocoenoides dalli observed--Continued

Date	Number seen	Location	
1961		Latitude	Longitude
11 Feb.	4	36°20' N.,	122°10' W.
" "	4	36°27' N.,	122°06' W.
15 "	6	36°00' N.,	122°29' W.
20 "	6	35°03' N.,	121°31' W.
" "	3	35°18' N.,	121°34' W.
21 "	4	35°22' N.,	121°11' W.
24 "	3	35°43' N.,	122°06' W.
25 "	2	36°01' N.,	122°11' W.
28 "	3	37°09' N.,	122°46' W.
" "	3	37°19' N.,	122°52' W.
19 Mar.	1	36°57' N.,	123°45' W.
21 "	4	36°47' N.,	122°44' W.
" "	4	36°44' N.,	122°13' W.
25 "	3	37°40' N.,	123°13' W.
26 "	2	37°00' N.,	123°19' W.
" "	2	37°02' N.,	122°59' W.
27 "	8	37°11' N.,	122°47' W.
27 Mar.	2	37°33' N.,	123°08' W.
31 "	2	38°04' N.,	123°20' W.
2 Apr.	3	38°46' N.,	123°43' W.
8 "	2	41°01' N.,	124°25' W.
9 "	6	41°08' N.,	124°45' W.
" "	2	41°00' N.,	124°50' W.
" "	1	40°55' N.,	124°50' W.
11 "	4	41°00' N.,	124°27' W.
" "	3	41°10' N.,	124°28' W.
" "	5	41°14' N.,	124°29' W.
" "	2	41°23' N.,	124°29' W.
" "	3	41°35' N.,	124°31' W.
13 "	2	43°35' N.,	124°45' W.
23 "	5	48°29' N.,	125°26' W.
24 "	3	48°20' N.,	125°19' W.
" "	3	47°09' N.,	124°32' W.

Table 13. --Sizes of five Phocoenoides dalli

Measurements	Tac 59-1 D ♀	Tac 59-2 D ♀	Tac 59-3 D ♀	MS 59-2 ♂	MS 59-3 ♂
Length	Cm.	Cm.	Cm.	Cm.	Cm.
Snout to tail notch	191.5	145.0	163.4	182.9	-
Snout to gape	11.0	9.5	11.3	11.9	12.7
Snout to eye (center)	21.5	19.5	20.3	-	20.3
Snout to blowhole (center)	16.8	19.5	19.8	-	22.9
Snout to insertion of flipper	32.0	24.7	30.4	-	26.7
Tail notch to tip of fin	104.1	74.0	86.4	98.8	111.8
Tail notch to anus	60.5	46.7	52.8	57.5	58.4
Tail notch to genital opening	68.0	52.0	59.5	68.8	76.2
Tail notch to umbilicus	109.0	82.4	93.5	98.8	109.2
Height of fin	16.7	14.0	14.6	16.3	15.2
Length of base of fin	28.0	25.5	28.5	26.3	27.9
Length of flipper (insertion to tip)	22.3	19.3	19.8	21.3	21.6
Width of flipper	9.7	8.6	8.9	9.4	10.2
Girth immediately behind flipper	103.0	87.8	91.2	96.5	105.4
Width of tail	-	40.7	43.0	-	-
Weight	Kg.	Kg.	Kg.	Kg.	Kg.
Liver	1.9	1.2	1.65	1.55	2.25
Heart	1.0	0.35	0.6	0.8	1.1
Lungs	2.95	1.25	1.6	1.4	2.3
Kidneys	0.55	0.28	0.45	0.4	0.6
Total weight of animal	110.0	60.0	72.5	90.0	115.0

Dall porpoises were observed off the Washington coast on six different occasions during April, four times within 30 miles of Cape Flattery, once about 30 miles west of Willapa Bay, and once 20 miles northwest of Grays Harbor.

Dall porpoises were not observed in company with other porpoises or dolphins. We collected five Dall porpoises as follows:

Tac 59-1 D.--Female; 20 March 1959; position lat. 40° 35' N., long. 125° 46' W., 63 miles west of Cape Mendocino; seven in group. Tooth counts: upper jaw--right 26, left 26; lower jaw--right 27, left 27. Stomach contents (volume 85 cc.): 100 percent squid remains.

Tac 59-2 D.--Female, nulliparous, no follicles present in ovaries, uterine horns small and smooth; 28 March 1959; position, lat. 40° 36' N., long. 125° 17' W., 42 miles west-northwest of Cape Mendocino; nine in group. Stomach contents (volume 240 cc.): 100 percent squid remains.

Tac 59-3 D.--Female; 28 March 1959; position, lat. 40° 41' N., long. 125° 17' W., 44 miles west-northwest of Cape Mendocino; 10 in group. Stomach contents: trace of squid.

MS 59-2.--Male; 10 March 1959; position, lat. 36° 49' N., long. 122° 00' W., 9 miles south of Santa Cruz; three in group. Tooth counts (visible teeth): upper jaw--right 20, left 20; lower jaw--right 8, left 8. Stomach contents: none.

MS 59-3.--Male; 13 March 1959; position, lat. 36° 53' N., long. 122° 00' W., 5 miles south of Santa Cruz; only one sighted. Tooth counts (visible teeth): upper jaw--right 23, left 22; lower jaw--right 4, left 4. Stomach contents: squid beaks.

Eschrichtius gibbosus, gray whale
(figs. 4 and 10)

The gray whale is called Eschrichtius, following Hall and Kelson (1959).

Gray whales were usually sighted near shore.

Table 14. --Number and location of Eschrichtius gibbosus observed

Date	Number seen	Location	
1958		Latitude	Longitude
2 Mar.	1	36°46' N.,	122°07' W.
4 "	4	37°46' N.,	123°01' W.
4 "	3	42°28' N.,	124°32' W.
8 "	2	37°56' N.,	122°54' W.
11 "	1	37°04' N.,	122°20' W.
25 "	1	36°33' N.,	122°13' W.
17 Apr.	1	45°58' N.,	124°48' W.
1959			
22 Jan.	3	38°20' N.,	123°15' W.
23 "	4	33°53' N.,	120°46' W.
28 "	2	36°35' N.,	121°59' W.
12 Feb.	1	35°22' N.,	121°21' W.
" "	3	35°36' N.,	122°04' W.
22 "	1	35°31' N.,	121°35' W.
4 Mar.	3-4	37°57' N.,	123°03' W.
7 "	3	37°05' N.,	122°22' W.
12 "	6	37°39' N.,	122°53' W.
" "	2	37°59' N.,	123°00' W.
" "	1	38°13' N.,	123°42' W.
15 "	1	41°23' N.,	124°32' W.
" "	1	40°37' N.,	124°32' W.
26 "	2	40°46' N.,	124°20' W.
2 Apr.	1	46°12' N.,	124°19' W.

Date	Number seen	Location	
1959		Latitude	Longitude
5 Apr	1	40°42' N.,	125°10' W.
19 "	8	47°35' N.,	124°46' W.
24 "	1	47°58' N.,	124°56' W.
" "	40+	47°50' N.,	124°48' W.
" "	200+ between	47°54' N.,	124°39' W. and
		47°40' N.,	124°29' W.
25 "	Numerous "	47°54' N.,	124°39' W. and
		47°54' N.,	124°53' W.
1961			
12 Jan.	1	37°40' N.,	122°41' W.
16 "	3	37°00' N.,	122°22' W.
29 "	2	35°19' N.,	120°59' W.
2 Feb.	1	33°50' N.,	119°50' W.
16 "	2	35°22' N.,	120°55' W.
23 "	2	35°33' N.,	121°10' W.
" "	2	"	"
7 Mar.	1	37°58' N.,	123°05' W.
23 Mar.	100+ between	48°23' N.,	124°45' W. and
		48°10' N.,	124°57' W.
" "	1	47°59' N.,	124°53' W.
" "	5+	47°52' N.,	124°49' W.
" "	1	47°23' N.,	124°32' W.
" "	1	47°22' N.,	124°31' W.
3 Apr.	2	40°01' N.,	124°03' W.
15 "	1	46°14' N.,	124°14' W.

Fourteen sightings were made in January and February between San Miguel and Bodega Head. March sightings ranged from Point Pinos on the south to Cape Flattery on the north. In April we recorded gray whales from Point Arena north to Cape Flattery. Single individuals were common, although groups of two, three, or four were also seen. On 24-25 April 1959, more than 200 gray whales were observed moving northward off the Washington coast between Destruction Island and James Island. On 23 March 1961, about 50 gray whales were observed between Cape Flattery and Umatilla lightship (or reef).

Balaenopteridae, rorquals (figs. 8 and 11)

In the areas that we covered, rorquals do not usually appear in abundance until after we had completed cruising in the spring. Relatively few rorquals or other large whales were seen as compared with the number that might be observed in late spring and summer.

Megaptera novaeangliae, humpback whale (figs. 7 and 11)

The humpback and finback whales are the main support of Pacific coast whaling stations. They appear to be absent from coastal waters until mid-March (table 16) and remain scarce until late April.

Eubalaena glacialis, right whale (fig. 8)

The right whale has been reported more frequently from the western Pacific (Omura, 1958) than in the eastern Pacific (table 17). The difference can be explained partly, at least, by the greater activity of whaling vessels and of people who would recognize species of whales.

Table 15. --Number and location of Balaenopteridae observed

Date	Number seen	Location	
		Latitude	Longitude
Balaenoptera physalus, finback whale			
1958			
29 Apr.	1	48°25' N.,	125°55' W.
		48 miles W Cape Flattery	
1959			
23 Feb.	2	35°34' N.,	122°10' W.
		44 miles W Pt. Piedras Blancas	
29 Mar.	7	40°55' N.,	124°31' W.
		19 miles SW Trinidad Head	
1961			
23 Jan.	2	33°49' N.,	120°40' W.
		35 miles SW Santa Rosa Island	
1 Feb.	1	32°34' N.,	119°32' W.
		40 miles S San Nicolas Island	
Balaenoptera acutorostrata, little piked whale			
1959			
13 Feb.	8	35°45' N.,	122°11' W.
		44 miles W Pt. Piedras Blancas	
18 Apr.	1	47°32' N.,	124°48' W.
		16 miles SW Destruction Island	
21 "	1	48°31' N.,	125°54' W.
		48 miles WNW Cape Flattery	
Balaenoptera musculus, blue whale			
1959			
19 Mar.	3	45°06' N.,	125°11' W.
		50 miles W Cascade Head	

Table 16.--Number and location of Megaptera novaeangliae observed

Date	Number seen	Location
		Latitude Longitude
1958		
13 Mar.	1	38°06' N., 124°15' W.
		58 miles W Point Reyes
1959		
19 Apr.	8	47°35' N., 124°46' W.
		13 miles SW Destruction Island
" "	8	47°37' N., 124°42' W.
		9 miles SW Destruction Island
1961		
13 Mar.	2	37°40' N., 122°42' W.
		20 miles S Point Reyes

Table 17.--Number and location of Eubalaena glacialis observed

Date	Number seen	Location
		Latitude Longitude
1959		
8 Apr.	3	45°55' N., 125°55' W.
		80 miles W Tillamook Head
10 "	3	46°54' N., 124°56' W.
		33 miles W Grays Harbor
19 "	8	47°35' N., 124°46' W.
		13 miles SW Destruction Island
" "	8	47°37' N., 124°42' W.
		9 miles SW Destruction Island

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